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# smart home solutions

# **Connection Server Installation Manual**

#### 1. Getting started

- Commands are given in purple, e.g.: sudo reboot
- Paths and links are given in red: imm/Pictures
- Notices are given in orange: No characters display when writing a password in terminal
- Tips and tricks are given in green: You do not want to run configuration via iMM CC at every server separately; as long as they are more, iMM CC can be enabled from any PC connected to local network...
- Commands are in italic

## Important configuration commands in Linux:

Ifconfig - finding IP address of station/server, similar to IPCONFIG in Windows mount – command for connection of certain device CD-ROM, network drive, etc.) umount - command for disconnection of certain device

#### 1.1. **Putting Connection Server in run**

- a) Once you unpack Connection server, let the device stabilize at room temperature.
- b) Insert attached SD card in the slot.
- c) Connect the cabling (do not connect the supply yet):
  - Display HDMI device
  - LAN cable for ethernet port!
  - Keyboard to USB port.
- d) After connecting the power supply (adapter with micro USB connector), Connection Server will start automatically.
- e) When starting the system you can watch opening of individual services on the screen. Some services do not open, and display FAILD in red; in majority of cases it is not a problem; and has no influence whatsoever on the run of Connection Server.
- f) When start of services is completed, only one line requiring login name will appear on the screen.

Alarmpi login: imm

Password: imm123

No characters display when writing a password in terminal



Verze 02- 039/2011 Rev.:091013

- g) To find IP address after signup use command ifconfig
- h) Further settings are performed via web interface iMM Control Center. And display device or keyboard need not be connected for the rest of time. Power supply, SD card with system and application and connection to network is sufficient to run Connection Server.

#### 1.2. Basic settings

Setting in this chapter need not be carried out; it serves for potential problem solution and general assistance in the Linux system orientation. Majority of these settings is done already in the production but one should get familiarized with them and go back to them if a problem occurs.

#### 1.2.1. Change of password

- a) Enter sudo passwd and confirm by Enter.
- b) You will be asked to enter the original password (default is "imm123"), and confirm by Enter.
- Then enter a new password, confirm by Enter; repeat the new password and confirm by C) Enter.

No characters display when writing a password in terminal.

#### 1.2.2. System restart and shutdown

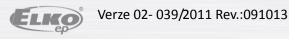
If you already know the IP address of Connection Server, the best way to restart or switch off is via iMMCC or remote access. By means of SSH e.g. in Putty software (free downloadable on internet). Sign up with the same data:

> Login: imm

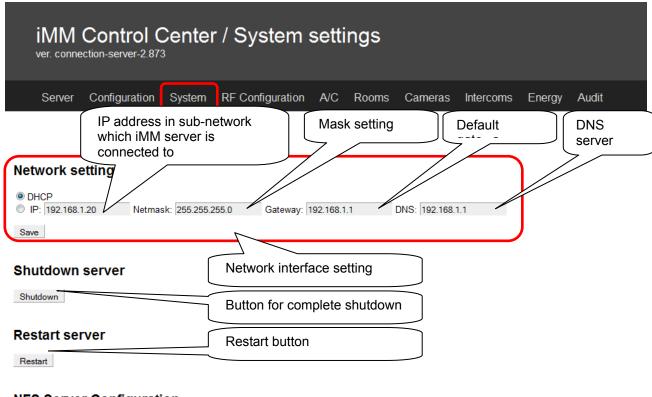
Password: imm123

Command for restart: sudo reboot Command for switching off: sudo shutdown

If you begin with sudo command, Linux should always ask to enter the password.



## 1.2.3. Setting static Connection Server IP address



## **NFS Server Configuration**

Update

In the System bookmark, you can reset parameters of network setting or restart, or use the "Shutdown" button to turn off Connection Server completely. IP address is usually set static to avoid its change in time.

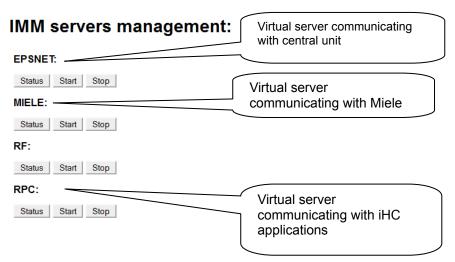
## 2. Configuration in iMM Control Center

IMM Control Center (the "iMMCC" hereinafter) is web interface serving for Connection Server setting. iMM CC is activated upon entering an address in your internet browser.

#### 2.1.iMM CC setting

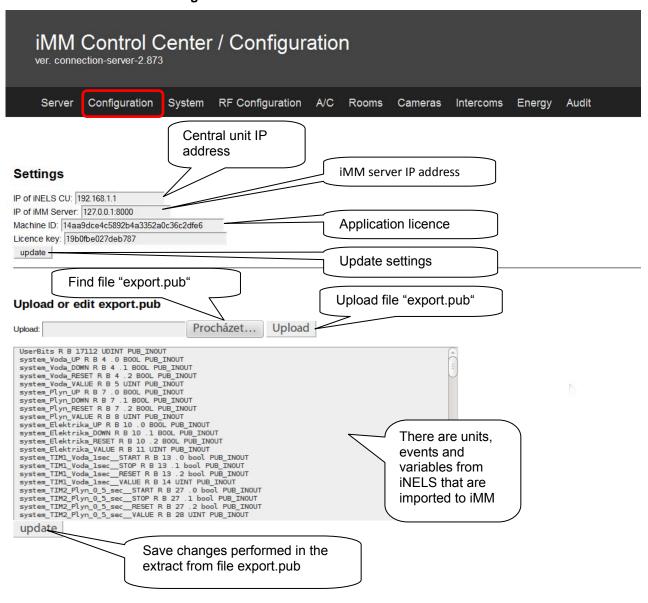
#### 2.1.1.Bookmark Server

iMM Control Center / Server ver. connection-server-2.873											
Server	Configuration	System	RF Configuration	A/C	Rooms	Cameras	Intercoms	Energy	Audit		



This bookmark contains control to virtual servers necessary for communication with CU, applications and devices of third parties. Within diagnostics, the state of individual virtual servers can be revealed (button "Status"), suspend their run (button "Stop"), or turn them on (button "Start"). Servers are turned on automatically when Connection Server starts up.

## 2.1.2.Bookmark Configuration

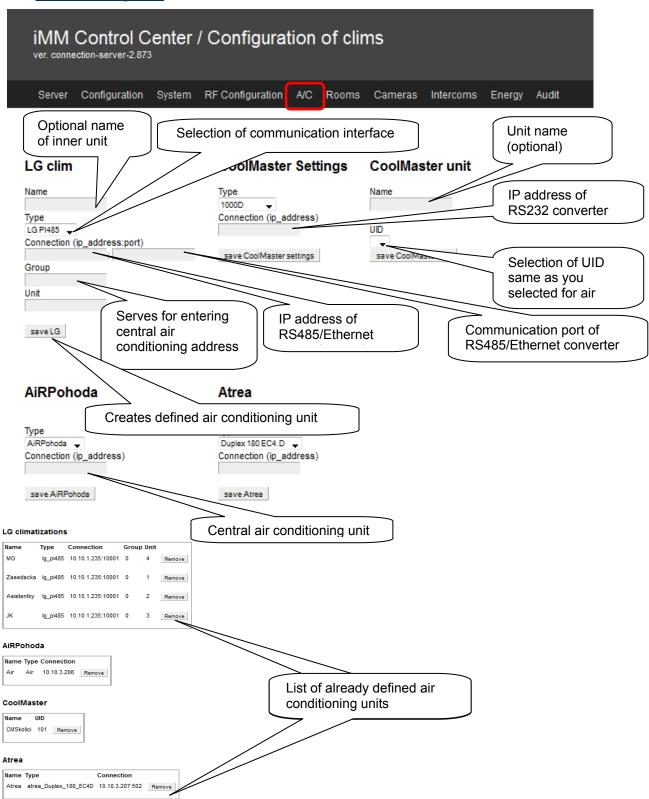


On this bookmark you can set IP address of central unit, IP address of server; in this case local address of Connection Server by entering 127.0.0.1!

There you can also upload export.pub exported from central unit

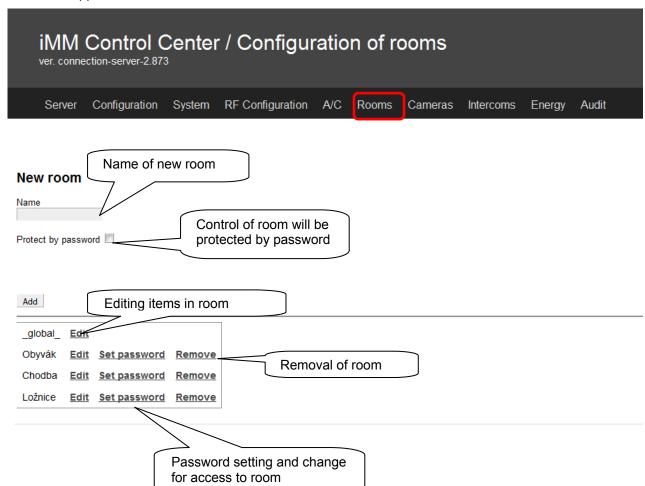
#### 2.1.3.Bookmark A/C

Serves for definition of air conditioning units and their control by means of iHC application. Supported communication card for air conditioning units is LG je PI485. See chapter <u>Wiring of Air Conditioning Units</u> for connection.



#### 2.1.4.Bookmark Rooms

Serves for configuration of file rooms.cfg which uploads iHC applications. Read more in the manual for iHC application.



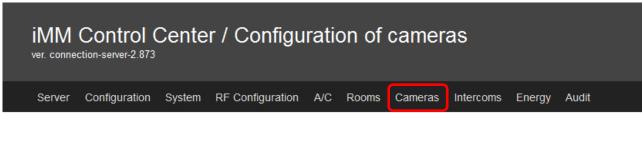
#### 2.1.5.Bookmark Cameras

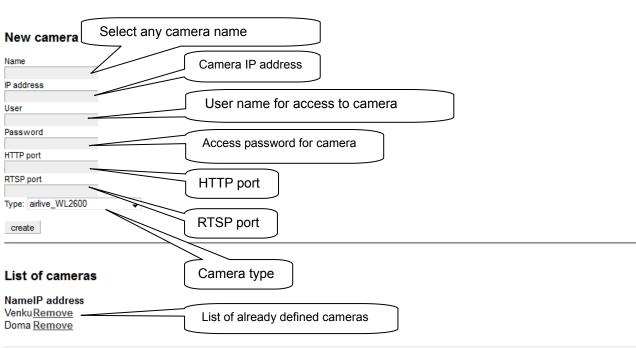
Serves for defining IP cameras you want to check by means of Application.

HTTP and RTSP ports are only entered if your IP cameras are configured for access from external network.

All cameras by Axis manufacturer with V2 and V3 protocol are supported, further we support the below listed types of cameras:

AirLive-WL2600, AirLive AirCam OD-600HD, AirLive AirCam OD-325HD, Planet ICA-M220, ACTi-ACM, and the following types by company Vivotek: FD-8134, FD-7132, PZ-7132.





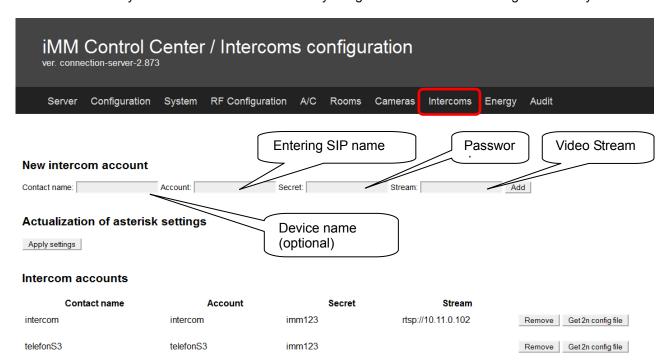
## 2.1.6. Calling between individual devices and sound

Set the following in the bookmark Intercoms: name, SIP name, password and videostream of device that you select beforehand for the device to call (sound, iMM client, phone), and add using the Add key. Copy Videostream from individual devices as long as they support it, e.g.: sounds from web interface, webcamera or any IP camera.

For instance, for 2n sound it will be stream, e.g.: "rtsp://192.168.88.83" which consists of ", rtsp:// , which is a kind of stream and sound IP address.

Once you set all calling devices, save it by pressing Apply settings.

Note: After clicking the Apply settings option, configuration files of asterisk server will overwrite. If you need own asterisk configuration, do not use "Apply settings", and modify configuration files manually. Add new contacts in iMMCC by filling in the contact and clicking the Add key.

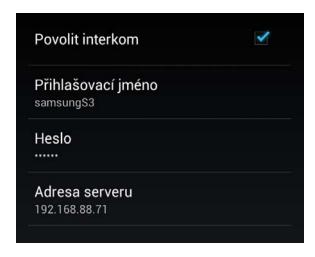


#### 2.1.7.Phone settings

Go to applications → menu → intercom settings, and there click on "Enable intercom"

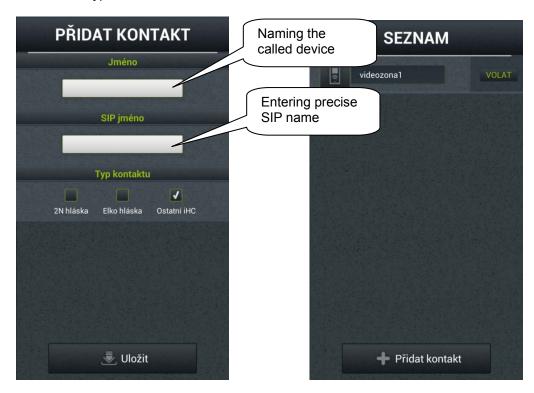
Enter the same data for the signup name as on the server web interface (e.g. SAMSUNGS3)

Also the password must be identical with the one entered on the server. Finally enter the IP address of Connection Server where you completed the settings.



In the application click on the intercom icon and then on "Add contact".

Name the opposite station and enter its precise SIP name (the name you entered on the server), and then select Type of contact and select "Save".



## Sound settings:







#### 2.1.8.IP sound

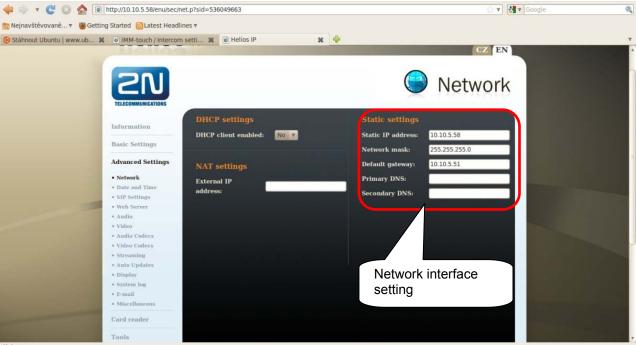
For IP sound 2N® Helios a source DC 12V/2A should be used. See the manufacturer's user manual for more detailed information on IP sound wiring. Assignment of IP address from DHCP server is set on the new IP sound. The assigned IP address of the sound has to be ensured (in the abstract on router, alternatively by means of software 2N® Helios IP Network Scanner)

a) Sign up to discovered IP sound via web interface.

Signup name: **admin** Password: **2n** 



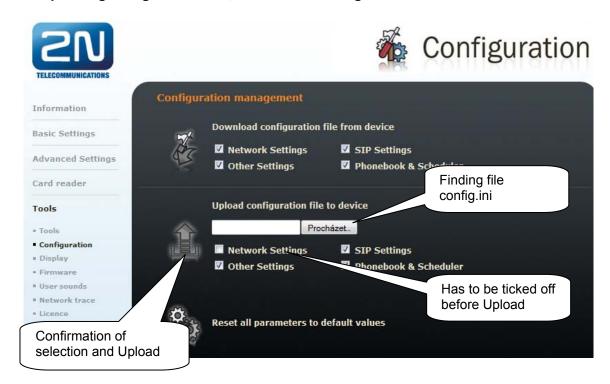
In the bookmark **AdvancedSettings -> Network** set fixed IP address from relevant range, and subnetwork mask.



b) The config.ini file generated from server web interface of a line where the added IP sound is located, has to be uploaded to IP sound via its web interface, in the following bookmark:

#### Tools -> Configuration-> Upload configuration file to device

Before uploading config.ini to sound, the Network Settings field must be ticked off.



For successful completion of installation the device must be restarted after the installation.

#### 2.1.9. Bookmark Energy

Directly in iMM Application the amount of energy consumption can be clearly displayed. Energy is recounted based on the amount of impulses that provide outputs from meters (gas-meters, electrometers, water-meters). Impulses are further processed in an optional input unit of system iNELS (IM2-140M, IM2-20/40/80B) in form of a counter. This value is by means of export.pub transferred to Connection Server where variable is in iMMCC on bookmark Energy assigned to Watter/Gas/Electrical. The setting of pulse conversion to unit of measure, selection of currency and setting the currency/unit is performed in iMMCC application in activated Energy module. The Energy module allows recording of consumed energy for a day, week, month and year. Data are saved in iMM Server – the data do not get lost even in case of power shutdown or power cut. Consumption can be displayed in a table or graph.

Consumed energy is displayed not only in given quantity but also as financial value.

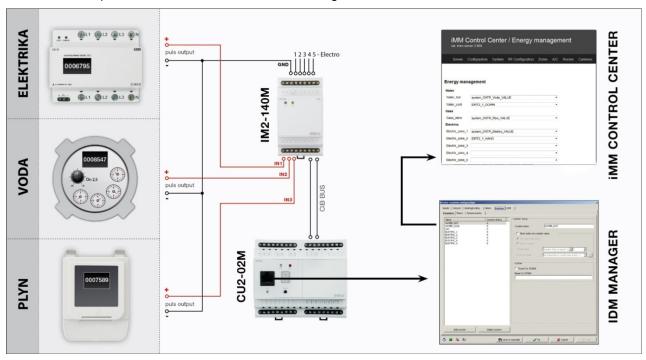
- 1. Click on the System Configuration button (icon of hammer and screwdriver F11)
- 2. Select bookmark System -> counters
- 3. Add counter that you name by energy you want to measure
- 4. Create a new action that you name e.g. upload electricity
- 5. Add a command in the action which will be user action -> commands for counters -> increment counter
- Select counter that corresponds with given action (e.g. for upload electricity you put counter
- 7. Add the action created as described above in system configuration to relevant binary input in action line when the input closes



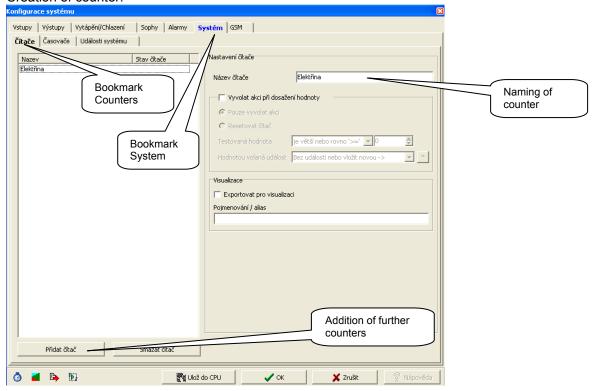
8. Once the file export-pub is created and uploaded to iMM server, in bookmark Energy you can assign in the counter value line (electricity\_VALUE). It must be VALUE in the line.

## Connection of energy meter

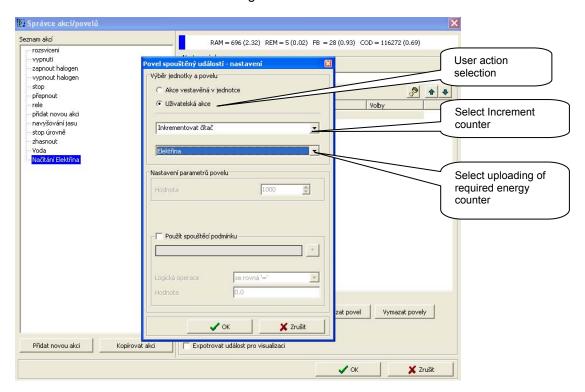
Energy meter connects by means of a binary output unit. Output from supported energy meter is distinguished to + a -, that's why polarity has to be maintained by bringing – minus to GND terminal and + plus to IN terminal. See 3.1.7. for settings.



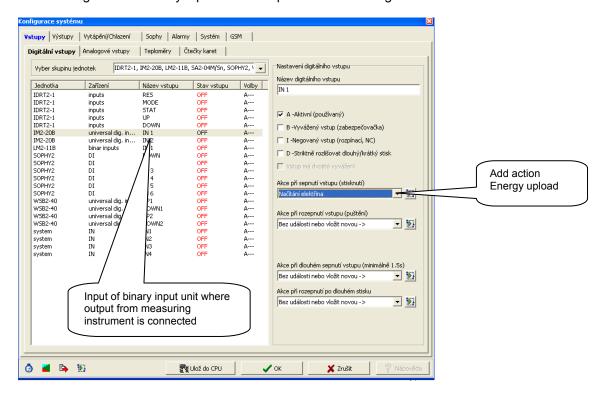
## Creation of counter:



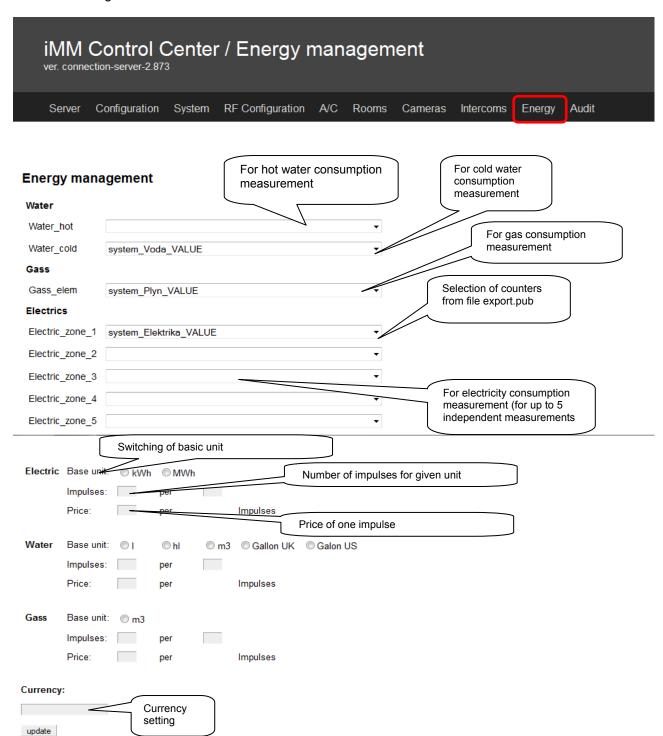
## Creation of action "Counter incrementing":



Action assignment to binary input where output from measuring instrument is connected.

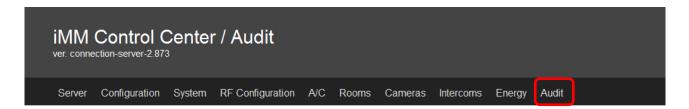


Assignment of counter value in iMM Control Center



#### 2.1.10. Bookmark Audit

Bookmark Audit serves for displaying and uploading LOG of events for diagnostic purposes.



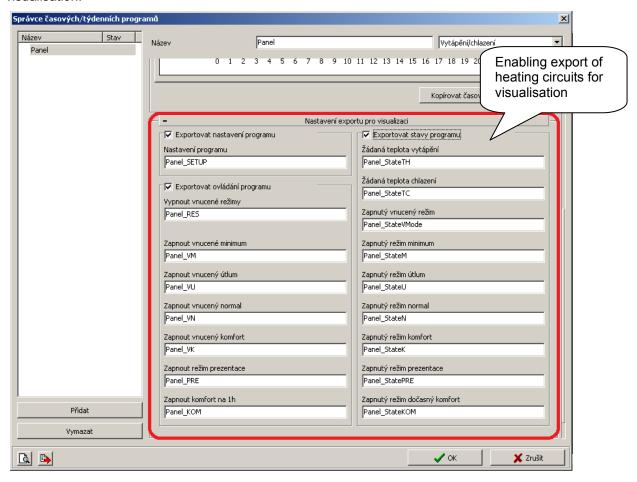
```
Logged events
2013-09-03 10:34:20.553192 Room successfully created: Venku 2013-09-03 10:34:50.542560 Room successfully created: Doma
2013-09-03 14:18:34.444876 IMM Control Center started
2013-09-05 21:49:20.282631 IMM Control Center started 2013-09-23 14:29:17.259980 IMM Control Center started
2013-09-30 13:23:02.840428 Updating settings: licenceKey=19b0fbe027deb787, epsnet=10.10.3.200, epsnetServer=192.168.88.102
2013-09-30 13:25:55.764767 Uploaded export.pub
2013-09-30 13:25:55.789940 Updated export.pub, current length=13147 2013-09-30 13:25:58.386317 Updated export.pub, current length=13147
2013-09-30 14:04:10.097171 Updating settings: licenceKey=19b0fbe027deb787, epsnet=10.10.3.200, epsnetServer=192.168.88.102
Download logs
```

When configuration in iMM CC is finished, restart Connection Server.

#### 2.2. Heating

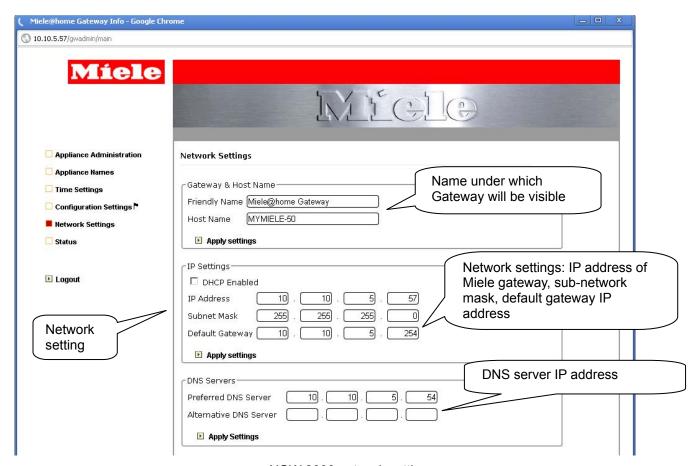
lin iHC application you can switch between individual heating modes within given temperature program (Minimum, Inhibition, Normal, Comfort, Auto).

If you wish to control individual heating modes, you have to enable export of control and setting of heating program in IDM software. In time/weekly program administrator a part of export setting for visualisation.



#### 2.3. Connection of Miele household appliances

To connect, you need to have connected Gate-wayXGW 2000 in the network which receives information from Miele device on PowerLine, and sends it on LAN network to iMM server and iMM clients. All devices must be on one phase. Communication on power line is enabled by all Miele appliances that have logo miele@Connection.



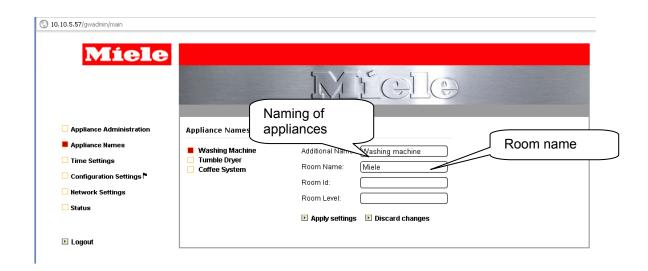
XGW 2000 network setting

For integration of XGW 2000 in network you need to set fixed IP address via its web interface from te given range of your network. On web interface Miele@Connection you can see all connected appliances. You can thus check that all appliances you use have sufficiently strong signal for XGW 2000.

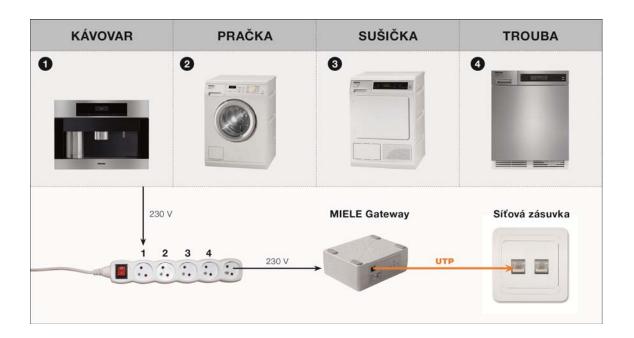
Setting the MieleGateWay IP address is recorded on iMM server in file /etc/imm/miele where the basic shape is already set within the factory settings, and only the IP address XGW 2000 has to be added in between the quotation marks.

In order to display the Miele control screen, similarly as for energy management, an icon referring to it has to be added on the Floorplan. Adding the icon is ruled by the same principles as those advised in chapter 4.1 provided that you need to go for "Miele" option on the list of elements. To describe the icon it is **NECESSARY** to keep the same name as is the name of the room – for the appliance on the web interface (Room Name). Only appliances with the same room name sill display which serves better arrangement in Control of Miele appliances.





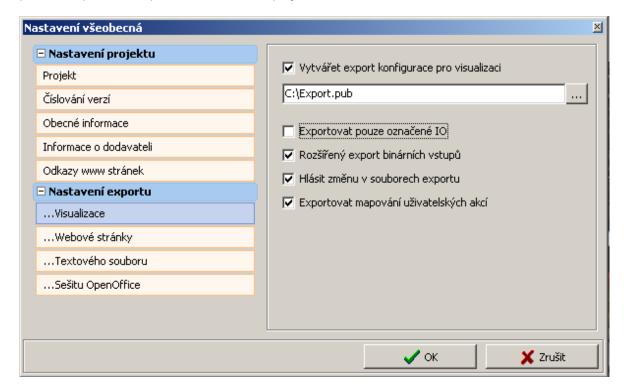
## Basic Miele wiring



#### 3. Supplements

#### 3.1. Export of configuration file to iMM

In the iNELS Design Manager (iDM) environment in the window "General Settings" select by the picture. Export will be performed when the project is saved in the central unit!



Two files Export.exp and Export.pub will be created in selected folder; the Export.pub is important for upload in iMM Control Centre.

In case of large installation we recommend to use cutchoose program for export.pub. This program serves for trimming export pub only for useful and important elements, and thus easier searching of elements in iMM floorplan in configuration.

If subtitles do not display correctly, subtitle encoding must be changed. The UNICODE encoding is set in the default.

## 3.2. Third parties' devices

## 3.2.1. Supported Miele appliances

## Washing machines

W 5967 WPS AutoDos W 5000 WPS Supertronic W 2859i WPM



## Integrated steam ovens

DG 5080 **DGC 5080 XL** DGC 5085 XL



## Glass ceramic cooking hotplates

KM 6202 KM 6204 KM 6212



## **Driers**

T 4859 Ci T 8969 WP EcoComfort T 8001 WP Supertronic



#### **Dishwashers**

G 5930 SCi G 5935 SCi XXL G 5980 SCVi G 5985 SCVi XXL



## **Coffee makers**

CVA 5060 CVA 5065





## Integrated baking ovens

H 5681 B

H 5681 BP

H 5681 BL/R

H 5681 BPL/R

H 5981 BP

H 5081 B

H 5081 BP

H 5080 B

## **Induction cooktops**

KM 5956

KM 6314

KM 6315

KM 6317

KM 6346

KM 6352

KM 6354

KM 6380

KM 6382

KM 6383

#### Kitchen aspirators

DA 420-4

DA 420 V

**DA 424 V** 

DA 430-4

DA 5000 D

DA 5100 D

DA 5294 D

DA 5320 D

DA 5330 D

DA 5590 D

DA 5620 D

DA 6290 D

DA 6590 D

DA 6520 D DA 249-4

DA 289-4

DA 439

DA 489-4

DA 5190 W

DA 5294 W

DA 5320 W

DA 5390 W

DA 5590 W

DA 5690 W

DA 6000W

DA 6290 W

DA 6590 W











## 3.2.2.Air conditioning unit CoolMaster

CoolMaster

There are 8 different versions for individual air conditioning makers

- CoolMaster Daikin 1000D
- CoolMaster Sanyo 2000S
- CoolMaster Toshiba3000T
- CoolMaster Mitsubishi Electric 4000M
- CoolMaster LG 6000L
- CoolMaster Fujitsu 7000F
- CoolMaster Mitsubishi Heavy 8000MH
- CoolMaster Hitachi 9000H



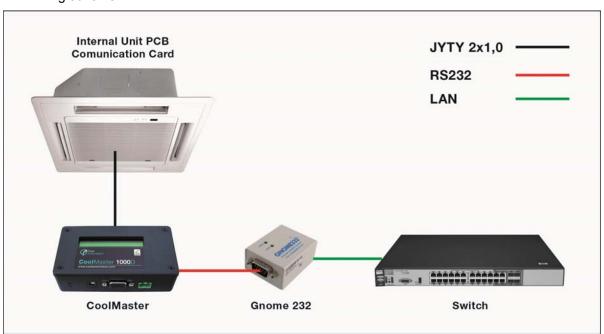
## Step-by-step putting in operation:

- 1. Connect all by the attached wiring scheme
  - 2. Set the RS232/ETHERNET converter
  - 3. Set the central address on the wall air conditioning unit control
  - 4. iMM communicates via converter Papouch GNOME RS232 and its IP address has to be entered in file /etc/imm/coolMaster.cfg together with the type of the CoolMaster control unit.

If everything is set correctly, the CoolMaster display will not show U00 G00 but the typed address. For instance, U00 G01. Then everything goes via iMM client but the air conditioning unit can still be controlled via local control; they mutually synchronize.

## Illustrative putting in operation:

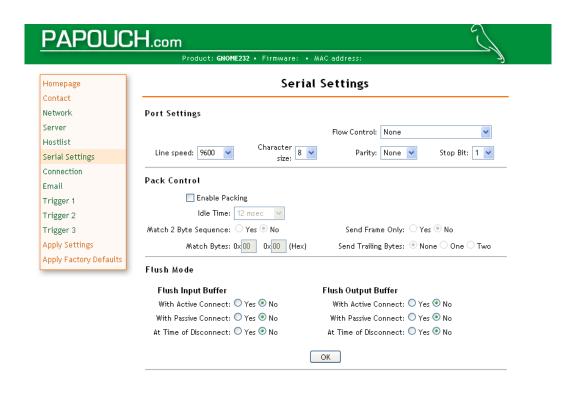
Wiring scheme

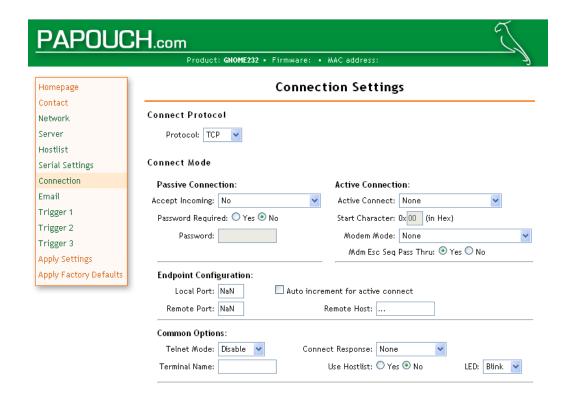


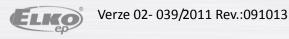
Connectors on unit



## Setting the RS232/ETH converter







#### How to set Daikin central address

Press and hold down for 5 seconds the TEST button

Setting mode 00 shows in the middle, and GROUP and the number on the left.

(GROUP should flash; if not press the



on/off key; then it should flash).



Select the desired central address using the Confirm by pressing the on/off button.



time setting button



Complete settings by TEST button.



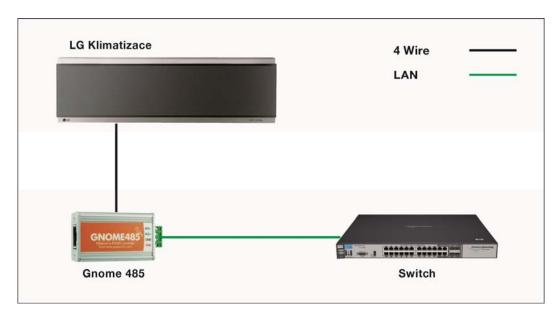


## 3.2.3. Connection of air conditioning units

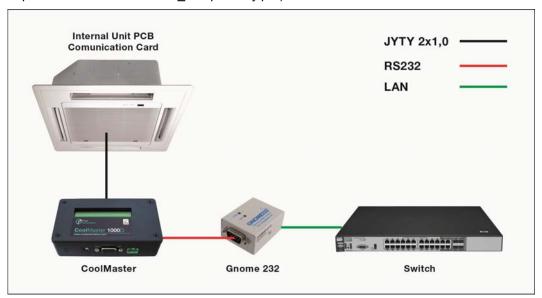
## Connection of air conditioning units

There are two ways of connecting air conditioning units in iMM system:

- a) Direct
- b) Indirect
- a) Direct connection means that the air conditioning unit control protocol is implemented directly in iMM. Currently air conditioning units of LG brand are supported; others have been worked on. We support communication of LG air conditioning units which is marked as PI485. Any LG unit supports that interface; it can be interconnected to application iTP via iMM.



b) Indirect connection means utilization of communication unit CoolMaster which can communicate with different types and makers of air conditioning units (http://www.inels.cz/media/PDF-export/download/Coolmaster compatibility.pdf). CoolMaster is then controlled from iMM.



Interconnection is performed by means of 485/ETHERNET converter. Steps for communication setting:

1. Connect the converter to communication interface of air conditioning unit and to ethernet.

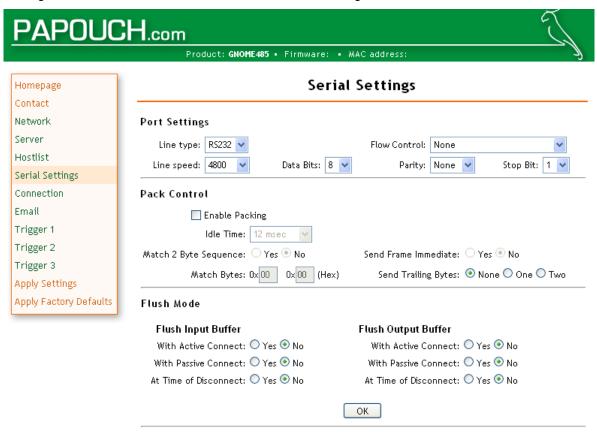


2. Set central address on air conditioning unit using a remote control (see the air conditioning unit user manual).

#### Example:

- RESET hold down
- MODE hold down
- Release RESET
- When 00 displays, release MODE
- Set the address inside the unit using buttons for temperature setting
- Press ON/OFF for directing to the inner unit
- Address displays on the unit
- To finish the setting, reset the control
- To check the address: RESET + PLASMA
  - 3. Set the converter
  - 4. Add the air conditioning unit in clims in iMM web interface (see 2.1.4.)
  - 5. Add air conditioning units in rooms in iMM web interface (see 2.1.5.) 2.1.5.)

Setting the 485/ethernet converter - bookmark Serial Settings



Setting the 485/ethernet converter – bookmark Connection



